UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,947	12/12/2005	James N. Petitte	297/204 PCT/US	1436

25297 7590 01/22/2010

JENKINS, WILSON, TAYLOR & HUNT, P. A.
Suite 1200 UNIVERSITY TOWER
3100 TOWER BLVD.,
DURHAM, NC 27707

EXAMINER
WILSON, MICHAEL C

ART UNIT	PAPER NUMBER
1632	

MAIL DATE	DELIVERY MODE
01/22/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,947	PETITTE ET AL.	
	Examiner	Art Unit	
	Michael C. Wilson	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7-10 and 58-68* is/are pending in the application.

4a) Of the above claim(s) *61-68* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-10 and 58-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8-7-09&9-25-09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 5, 6 and 11-57 have been canceled. Claims 58-68 have been added. Claims 1-4, 7-10 and 58-68 are pending.

Applicant's arguments filed 10-29-09 have been fully considered but they are not persuasive.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

Claims 1 and 7 need to indicate the abbreviation for "primordial germ cells" is PGC in the first occurrence of the phrase. Please use "primordial germ cells (PGC)" in the first occurrence of the phrase in claims 1 and 7.

Consider: –i) immunizing a female bird with DAZL, ii) obtaining an egg comprising an embryo from the female bird, wherein the egg comprises antibodies that recognize DAZL in an amount sufficient to bind to DAZL on PGCs of the embryo and decrease the number of PGCs in the embryo, iii) repopulating the gonad of the embryo with donor PGCs of a different strain of the same species, and iv) obtaining a chimeric avian from the embryo.-- Please point to support for each step in the specification originally filed upon amendment.

Election/Restrictions

While support for administering VASA and DAZL as in claim 62 is found on pg 54 in Table 1 (chicken #548, for example), newly submitted claims 61 and 62 require administering at least two antigens, which is independent or distinct from the invention

originally claimed for the following reasons: the species election originally made on 5-16-07 required election of one antigen for consideration, and the claims did not claim administering at least two antigens. Administering DAZL was elected without traverse. In addition, claims 63-68 are drawn to producing a chimeric avian using donor PGCs from the same or different avian species as the recipient embryo, which is equivalent to Group III and IV in the restriction requirement sent 5-16-07: however, applicants elected Group II without traverse in the response filed 6-18-07.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 61-68 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 1-4, 7-10 and 58-60 are under consideration as they relate to decreasing PGC numbers/development using DAZL proteins.

Claim Rejections - 35 USC § 112

New Matter

The rejection of claims 1-4 and 7-10 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement has been withdrawn in view of the abstract originally filed and the paragraph bridging pg 11-12.

Enablement

The rejection regarding how to repopulate an avian embryo with PGCs from another avian species (labeled item C in the office action sent 4-29-09) has been withdrawn because it relates to a patentably distinct method (Group IV), which applicants elected without traverse.

The rejection regarding how to repopulate an avian embryo with PGCs from the same avian species (labeled item D in the office action sent 4-29-09) has been withdrawn because it relates to a patentably distinct method (Group III), which applicants elected without traverse.

I. Claims 1-4 and 7-10 remain and claims 58-60 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 is drawn to a method for modulating primordial germ cell (PGC) numbers in an avian embryo, the method comprising immunizing a female bird with an antigen associated with primordial germ cells, whereby an egg produced by the female bird comprises a sufficiently high concentration of antibodies that bind to the antigen expressed by an avian embryo present within the egg to decrease endogenous PGC numbers in the avian embryo. Claim 7 is drawn to a method for modulating primordial germ cells (PGC) development in an avian embryo, the method comprising immunizing a female bird with an antigen associated with primordial germ cells, whereby an egg produced by the female bird comprises a sufficiently high concentration of antibodies

specific for the antigen to bind to the antigen expressed by an avian embryo within the egg to inhibit development of PGCs in the avian embryo. Claim 58 is drawn to a method for reducing primordial germ cell numbers, inhibiting primordial germ cell development, or both in an avian embryo, the method comprising: (a) providing a female avian selected from the group consisting of a chicken and a turkey; (b) immunizing the female avian with an antigen associated with primordial germ cells selected from the group consisting of SSEA-1, VASA, EMA-1, germ cell-less, dead end, nanos, stella, fragilis, and DAZL, wherein the immunizing results in an egg produced by the female avian comprising a sufficiently high concentration of antibodies that bind to the antigen to decrease endogenous primordial germ cell numbers, inhibit primordial germ cell development, or both in an avian embryo present within the egg.

A. Claims 1 and 7 encompass decreasing PGCs in an avian embryo without repopulating the embryo with donor PGCs and without obtaining a chimeric avian. However, the sole disclosed use for decreasing PGCs in an avian embryo is to repopulate the embryo with donor PGCs and make chimeric avians (pg 1, lines 14-30; paragraph bridging pg 2-3; pg 36, lines 4-11). Accordingly, repopulating the embryo with donor PGCs and obtaining a chimeric avian are essential steps to the method claimed. The specification teaches decreasing PGC numbers in an embryo using DAZL-C and DAZL-N proteins administered to female chickens (pg 55, lines 19-26; pg 56, lines 12-17). The number of PGCs was determined by sacrificing the embryo (pg 54, lines 4-6). While the specification exemplifies the step of decreasing PGCs without repopulating the embryo with donor PGCs and obtaining a chimeric embryo, the

specification does not teach how to decrease PGCs in an embryo that is sacrificed as described on pg 54. Without such guidance, applicants fail to provide an enabled use for merely decreasing PGCs and sacrificing the embryo as described on pg 54-56. Overall, the specification does not provide an enabled use for merely decreasing PGCs in an avian embryo as claimed without repopulating the treated embryo with donor PGCs and without obtaining a chimeric avian.

Applicants argue the examiner has focused the rejection on how to use the product made by the method. Applicants' argument is not persuasive. The rejection is based on the fact that the specification fails to adequately teach those of skill how to use the method claimed to merely decrease the number of PGCs in an embryo as claimed. The method has no enabled use in and of itself as claimed. Methods of making chimeric avians after performing the method now under consideration was found to be patentably distinct in the restriction requirement sent 5-16-07 and was not traversed in the response filed 6-18-07. Without repopulating the cells of the embryo, there is no enabled use for merely decreasing the number of PGCs in an avian embryo as claimed because the embryo would not develop normally. It is noted that the method of claim 1 broadly encompasses increasing or decreasing the number of PGCs in the embryo which is not limited to a starting point for making chimeric avians. The method also encompasses enhancing germline transmission of a nucleic acids as in Groups IX and X in the restriction sent 5-16-07. Accordingly, applicants' arguments regarding using the methods to make chimeric chickens cannot be considered because such

methods relate to a patentably distinct method which applicants elected without traverse.

Applicants' arguments regarding intermediate/final products fail to apply to the methods claimed; products do not correlate to methods. The arguments regarding intermediate/final products also do not apply because the method now under consideration would be a subcombination in a combination/subcombination relationship rather than an intermediate in an intermediate/final product relationship. If inventions II and III or IV are related as combination and subcombination, then the inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the PGC numbers can increase or increase. The subcombination has separate utility such as making chimerics (Groups III and IV), increasing the number of male birds (Groups V and VI), or enhancing germline transmission (Groups IX and X). Therefore, applicants' arguments regarding intermediate products do not apply and are not persuasive.

B. Applicants have provided no means for assaying whether PGC numbers decrease in an embryo that becomes a viable avian. Specifically, applicants fail to teach how to determine whether amounts of antigens or antibodies that decrease endogenous PGC numbers had been injected or obtained as claimed without sacrificing the embryo. This is essential to the invention as the sole disclosed use for the method

claimed is to obtain a chimeric avian from the embryo (see section A above). The specification teaches assaying the number of PGCs in an embryo in the egg of an avian treated with DAZL-C and DAZL-N (pg 55, lines 19-26; pg 56, lines 12-17) by sacrificing the embryo (pg 54, lines 4-6). However, the specification fails to teach how to determine PGC numbers while letting the embryo survive. The ability to predict whether PGC numbers had decreased after immunizing an avian with an antigen was not described at the time of filing or in the specification; therefore, the ability to do so is "unpredictable." The specification fails to teach how to use the assay in which the embryo is sacrificed on pg 54 to determine whether PGC numbers decreased in a viable avian.

In addition, the specification does not teach how to use breeding techniques to assay PGC numbers. A chimeric avian obtained from the embryo could be bred, and if donor PGCs were administered to the embryo, it could be determined whether the donor PGCs had repopulated the gonad by observing for donor PGC phenotypes in the offspring. The specification, however, does not teach any such assay. The specification does not teach how to use breeding techniques to determine that a decrease in PGC numbers had occurred. In particular, such a technique could not apply to chimeric interspecies avians; such a technique would require counting the number of chickens and turkeys that occur from breeding a chimeric chicken/turkey which is not disclosed in the specification or the art at the time of filing. Such a technique could not apply to avians made with donor PGCs of the same strain; the

specification does not teach how to distinguish donor PGCs and endogenous PGCs of the same strain during breeding assays.

Overall, the specification has left those of skill with undue experimentation to determine whether PGC numbers decreased in an avian embryo as claimed without sacrificing the embryo.

Applicants argue that once it is shown that immunizing the female avians predictably results in decreased PGC numbers, there would be no need to test each embryo for a similar result. Applicants point to pg 56, Example 2. Applicants' argument is not persuasive because Example 2 requires killing the embryo and because applicants have not shown how to perform the method so that the avian embryo lives.

Applicants' arguments regarding using the methods to make chimeric chickens cannot be considered because such methods relate to a patentably distinct method, which applicants elected without traverse.

C. The specification does not enable using any antigen "associated" with PGCs as broadly claimed. Claims 1 and 7 require administering "antibodies specific for the antigen to bind to the antigen expressed by an avian embryo within the egg to thereby decrease endogenous PGC numbers". The specification defines antigens "associated" with PGCs as any antigen expressed by a PGC (paragraph bridging pg 11-12). The claims encompass antigens associated with PGCs and any other cells; the claims encompass antibodies attacking the antigen expressed on PGCs and anywhere else in the avian embryo. For example, the claim now encompasses using a histocompatibility marker present on all cells (and also "associated" with PGCs) as the

antigen. The claims also encompass binding the antibodies to antigen anywhere in the embryo. Pg 29 states "antibodies that bind antigens associated with PGCs are deposited in the yolk of eggs produced by female birds immunized with the antigen." Pg 30-31 discusses modulating PGC development in an avian embryo. The examples, however, are limited to using antigens that are specific to PGCs. The specification does not teach how to use the method claimed when the antigen is "associated with" PGCs and other embryonic cells as now broadly claimed. Without using antigens that are specific to PGCs, the antibodies obtained in the egg would destroy all tissues expressing the antigen and prevent survival of the embryo. Applicants fail to adequately teach how to use the method claimed with any antigen "associated with" PGCs that would also destroy tissues other than PGC in the embryo. Without such guidance, it would have required those of skill undue experimentation to determine how to administer any antigen "associated with" PGCs such that destruction of non-PGC tissues in the embryo is prevented and survival of the embryo is allowed.

Applicants argue the examiner has relied on speculation and has not provided scientific reasoning for the rejection. Applicants' argument is not persuasive. The term "associated" can be interpreted broadly; therefore, any antigen found on a PGC is "associated" with the PGC. Not every antigen that is on the PGC can be used as a target for destruction because it would destroy non-PGCs as well. The claims are not limited to targeting antigens found only on PGCs.

Indefiniteness

II. Claims 1-4 and 7-10 remain and claims 58-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The metes and bounds of what applicants consider "sufficiently high concentration of antibodies that bind to the antigen expressed by an avian embryo within the egg to thereby decrease the PGC numbers [or development] in an avian embryo" (claims 1 and 7 as amended) remain unclear. The specification does not teach how to determine whether PGCs numbers decrease without sacrificing the avian (pg 54, lines 4-6, "Stage 27 (H&H) embryos were sacrificed"). The specification does not teach how to use the assay on pg 54 when making chimeric avians (the sole disclosed use for the method claimed). The concentration of antibodies required to decrease the number or development of PGCs and maintain a viable embryo is not set forth in the specification or the art at the time of filing. Applicants have not provided an assay for those of skill to determine when the amounts of antibodies were "sufficiently high" enough to decrease PGC numbers in an embryo that becomes a viable avian. Thus, those of skill would not be able to determine when the concentration of antibodies obtained was infringing on the claim when making viable chimeric avians.

Applicants argue they have provided ample guidance to determine how to assess PGC decreases in an avian embryo that had hatched. Applicants' argument is not persuasive. Applicants have not provided a means to determine how to determine that PGC numbers decrease in an avian embryo without sacrificing the embryo.

Applicants argue the phrase is functional. Applicants' argument is not persuasive. The phrase requires an amount of antibodies sufficient to perform a function without teaching the metes and bounds of the amount or the means to assess the function without sacrificing the embryo.

The rejection regarding the metes and bounds of what applicants consider antibodies “specific for the antigen to bind to the antigen expressed by an avian embryo within the egg to thereby decrease endogenous PGC numbers” (claims 1 and 7) has been withdrawn because the term “specific" has been deleted.

The art did not reasonable teach or suggest modulating primordial germ cells (PGC) numbers/development in an avian embryo by immunizing a female bird with DAZL, whereby an egg produced by the female bird comprises a sufficiently high concentration of antibodies that bind to DAZL expressed by an avian embryo present within the egg to decrease the number of PGCs in the avian embryo or inhibit the development of PGCs in an avian embryo present within in the egg.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

No claim is allowed.

Inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wilson who can normally be reached at the office on Monday, Tuesday, Thursday and Friday from 9:30 am to 6:00 pm at 571-272-0738.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Peter Paras, can be reached on 571-272-4517.

The official fax number for this Group is (571) 273-8300.

Michael C. Wilson

/Michael C. Wilson/
Primary Patent Examiner